	EYFS	Year One	Year Two	End of KS1 expectations	Year Three	Year Four	End of LKS2 expectations	Year Five	Year Six	End of UKS2 expectations
Computer Science	Following instructions as part of practical activities and games and learning to debug when things go wrong

Learning to give simple instructions

Experimenting with programming a Bee-bot and learning how to give simple commands.

Learning to debug instructions, with the help of an adult, when things go wrong | Writing clear algorithms, considering the different steps required and explaining what an algorithm is.

Using clear instructions in their algorithm and following an algorithm carefully.

Creating a clear, achievable program for a virtual assistant and explaining what inputs and outputs are

Showing clear decomposition of their designs into the steps that are needed to make it

Identifying bugs and fixing algorithms.

Putting a set of instructions in the correct order and understanding why this is important.

Building a model rocket according to instructions and their designs.

Explaining what happened when they pressed given buttons on a BeeBot and explaining why they think the buttons they pressed were the right ones

Recognising which buttons are necessary in the sequence of instructions. Predicting correct instructions to reach a pre-planned destination.

Identifying a destination and getting Bee-Bot there (in as many steps as necessary) | Explaining what an algorithm is.

Recognising what code blocks to use in Scratch JR to create an algorithm.

Explaining what a loop is.

Can include blocks chosen for playing music.

Sequencing blocks appropriately.

Explaining what decomposition means.

Writing clear and precise algorithms that can be understood by another person.

Creating algorithms to solve problems and beginning to use loops to make their code more efficient.

Clearly explaining what abstraction is. | Write their own clear and precise algortihms both plugged and unplugged.

Use abstraction to remove unnecessary detail.

Explain what decomposition means and why we use it.

Explain what a loop is in Scratch JR.

Use Scratch JR to create an algorithm for a purpose (e.g. animation, to tell a joke etc.)

Debug an algorithm on Scratch JR and using a Bee-Bot.

Predicting instructions to achieve a goal.

Program a Bee-Bot to follow a set of directions. | Explaining what an algorithm is and understanding the purpose of an algorithm.

Explaining what happened to the program when they added certain blocks.

Suggesting how the colour differences could help them predict block actions.

Remix existing code and add additions.

Including a loop within their program and explain what it's doing.

Selecting blocks to create a desired effect.

Using a systematic approach to debug code justifying what is wrong and how it can be corrected.

Use decomposition to explain the parts of a laptop computer. | Knowing how to solve unplugged problems by decomposing them into smaller parts.

Identifying and remixing HTML code to alter the text size and content of a web page.

Understanding how to create a simple code script.

Creating a Scratch program which draws a square and at least one other shape.

Modifying existing code.

Being able to change a sprite's appearance.

Identifying some of the code blocks used within a game.

Knowing what a variables is and using the 'say' and 'ask' blocks.

Knowing how to use a variable to record a score.

Understanding that problems can be solved more easily using computational thinking

Understanding the terms 'pattern recognition' and 'abstraction'.

Using abstraction to identify the important parts when completing both plugged and unplugged activities. | Use Scratch 3.0 with greater fluency.

Remix existing code on Scratch 3.0

Use abstraction and pattern recognition to modify existing code.

Create algorithms both plugged and unplugged independently

Use repetition in programs.

Begin to use loops to make code more efficient

Use decomposition to solve problems.

Identify patterns in unplugged activities.

Alter a website's HTML code. | Explaining what basic commands do in Scratch.

Explaining how their program links to a theme.

Including a nested loop (loop within a loop) in their work.

Decomposing a program without support.

Correcting their own simple mistakes.

Including repetition and explaining its function.

Coding a piece of music that combines a variety of structures.

Making connections with previous programming interfaces they've used, e.g.: Scratch

Recognising blocks they've used previously,

Recognising the difference between 'on start' and 'forever' in Micro:bit

Identifying inputs and outputs used and making predictions about how variables work.

Breaking a program down into smaller steps, suggesting appropriate blocks. | Explaining that codes can be used for a number of different reasons.

Explaining the importance of historical figures and their contribution towards computer science.

Evaluating code, understanding what it does and using adapt existing to code for a specific purpose.

Using sequence, selection, repetition and variables within a program.

Iterating ideas, testing and changing throughout the lesson and explaining what their program does independently.

Using nested loops in their designs.

Decomposing the program into an algorithm and modifying a program to personalise it.

Writing increasingly complex algorithms for a purpose. | Ue further programming software beyond Scratch (e.g. code.org, Lego WeDo, Micro:bit)

Decompose a program into steps (an algorithm).

Predict what software will do using decomposition.

Write increasingly difficult algorithms for a purpose.

Use nested loops in code.

Debug effectively to make programs more efficient.

Change existing code to make it more personal.

Discuss important historical figures and their contribution to Computer Science. |

Identifying and correcting mistakes when they go wrong.

Information Technology	Learning how to operate a camera to take photographs of meaningful creations or moments Recognising that a range of technology is used in places such as homes and schools Learning what a keyboard is and how to locate relevant keys Learning what a mouse is and developing basic mouse skills such as moving and clicking Using a simple online paint tool to create digital art	Explaining what is happening in a photo story. Taking their own photos. Suggesting changes that you can make to photos. Designing a rocket using a basic range of tools on graphics editing software. Knowing that images can be found on the Internet. Adding both images and text. Resizing and dragging images around the page. Representing data in different ways and using this to answer questions. Represent same data in a pictogram as well as tables and charts Representing data digitally. Creating a branching database. Designing a computerised invention to gather data; explaining how it works. Inputting data into a table or spreadsheet and measuring distances accurately.	Understanding which are the home row keys and how to find them for typing as well as understanding and using spacebar and backspace correctly. Typing and making simple alterations to text using buttons on a word processor. Creating a document, which contains appropriate images and modification of text, using keyboard shortcuts. Understanding how to use copy and paste to copy text from one document to another; Using different text styles and editing tools and crediting source materials. Planning out an animation. Creating a flip book animation. Creating a short stop motion with small changes between images. Identifying relevant information in a spreadsheet. Confidently naming the peripherals: screen, keyboard and mouse and understanding the function of each of the parts. Recognising that buttons cause effects	Identify inputs and outputs of some devices. Describe some components that make up a computer. Begin using keys on a keyboard correctly and efficiently to touch type. Type and format text on word processing software. Control a mouse to drag, click and resize images. Use online paint tools to create digital art. Use and operate a camera to take photos. Use photos to create an animation. Represent and interpret data on spreadsheet software	Explaining what is meant by field, record and data. Identifying examples of paper and computerised databases. Putting values into a spreadsheet, sorting, filtering by a particular value. Interpreting that data and creating questions that can be answered by the data. Creating a graph, naming different types of chart and explaining the purpose of visual representations of data. Suggesting what input and output are and recognising that the computer sends and receives instructions. Explaining that parts work together to make the laptop work and suggesting the role of some of the parts. Naming the different parts of a computer (ROM, RAM, CPU, etc) Suggesting what computer memory is and using a QR code. Making some comparisons between laptops and tablets. Understanding how to log in and log out of email. Sending a simple email which includes a subject.	Adding text between the heading and paragraph tags. Adapting the basic elements of a story within a web page using the 'Inspect Elements' tool. Finding images that are permitted for reuse and changing at least one image and text in a web page. Using a range of features in Google Sites. Understanding the features of Google Sites and using these to build a web page. Creating a professional looking web page with useful information and a clear style, which is easy for the user to read and find information from. 'Recording information in a spreadsheet and explaining how this data is collected. Creating a video using green screen technology. Editing a vdeo using video software. Understanding the need to be thoughtful when working on a collaborative document. Using comments to suggest changes to a document. Using a variety of different slide styles to convey information including images and transitions.	Know how to take photographs and record video using a tablet or camera. Use editing software to edit and enhance video. Know and explain some components that make up a computer. Know how to log in and log out of an email account. Know how to write an email including a subject, 'to' and 'from'. Include an attachment on an email Identify what computer networks are and how they provide multiple services such as the World Wide Web Identify the key components within a network Create a webpage with content for a purpose Use online Google software to create word documents, presentations and spreadsheets. Collaborate with other online users using Google software Represent, create and interpret data on spreadsheet software. Sort and filter databases to easily find information.	Identifying some of the types of data which the Mars Rover could collect (e.g., photos). Explaining how the Mars Rover transmits the data back to Earth (radio waves) Understanding each one or zero is referred to as a bit Reading any number in binary, up to eight bits. Identifying binary as the most basic way computers communicate. Relating binary signals (Boolean) to a simple character based language, ASCII Identifying input, processing and output on the Mars Rovers Knowing the difference between ROM and RAM. Explaining how the size of RAM affects the processing of data. Creating a pixel picture, explaining that a pixel is the smallest element of a digital image. Saving JPEG as a bitmap and recognising the difference in file size Explaining the 'fetch, decode, execute' cycle in relation to real-world situations Beginning to use 3D design tools. (TinkerCAD) Combining text and images in a poster	Understanding why barcodes and QR codes were created and ow the data contained can be used by computers. Creating (and scanning) their own QR code using a QR code generator website. Explaining how infrared can be used to transmit a Boolean type signal. Explaining how RFID works and recalling a use of RFID chips. Typing formulas into cells using a spreadsheet. Taking real time data and entering it effectively into a spreadsheet. Presenting data to answer a question. Sorting data within an Excel spreadsheet by inserting a table. Knowing what the first computer was built for. Understanding and identifying how computers have changed and how they made a difference to the modern world. Presenting information about a historical figure in an interesting and engaging manner using a presentation software. Using Word Processing skills to produce an effective presentation. Providing feedback to others on their presentations.	Understand the history of computers and how they have changed throughout history. Know and explain the components that make up a computer. Explain how data is transferred using binary. Understand and read binary code up to eight bits. Know how barcodes, QR codes, RFID etc are used in everyday life. Inputting and presenting data in a spreadsheet effectively. Know and understand that computer networks provide multiple services. Understanding the various components of a computer and describing the features and why they are important. Use 3D design software to design a product. Improve and edit videos and images. Know how to use video editing software to animate (Stopmotion) and

			and that technology follows instructions		Adding at least one attachment before sending an email. Editing and typing an email address. Recognising that a network is two or more devices connected. Recognising that files are saved on a server and that they travel through wireless and wired connections. Understanding that networks connect to the internet via a router. Explaining that routers connect us to the internet. Explaining that websites are split into small pieces to be sent via the internet and that packets are encoded with information to get to the right place. Creating a storyboard to plan a book trailer. Using digital devices to record video or take photos, framing shots carefully to create the desired effects. Importing videos and photos into film editing software in order. Adding text to the trailer, as well as incorporating different transitions between shots or images.	Creating a Google Form with a range of question types. Exporting data to a spreadsheet, highlighting data using conditional formatting and calculating averages and sums of numbers.		Creating a toy with simple images with a single movement. Using a camera to take 24 frames with small movements to create Stop Motion animation. Decomposing an story into smaller parts to create a storyboard with simple characters. Making small changes to the models to ensure a smooth animation and deleting unnecessary files. Adding film effects such as extending parts and the use of a title.	Explaining how to record sounds and add in sound effects over the top. Producing a simple radio play with some special effects and simple edits. Understanding how computers work by recognising its components and why they are important. Describing all of the features that we'd expect a computer to have including RAM, ROM, hard drive and processor. Recognising that data can become corrupted within a network and that data sent in 'packets' is more robust. Recognising differences between mobile data and Wi-Fi . Recognising how the Internet Of Things has led to Big Data and making links between then two. Explaining ways that Big Data or IOT principles could be used to solve a problem or improve efficiency within the school. Using CAD software more independently to design a product. Creating an appealing website aimed at a target audience.	create informative videos/ radio plays. Use Word Processing and Presentation software to produce engaging and interesting presentations. Create an appealing website aimed at a target audience.
Digital Literacy	Recognising that a range of technology is used in places such as homes and schools. Learning to log in and log out	Logging in and using mouse and keyboard skills to navigate the computer. Logging in and out of a computer unaided.	Navigating a digital map. Digitally draw using drawing software. Navigate a simple webpage to get to information needed (e.g. home, forward,	Switch on and log on to a computer unaided. Click and drag objects with accuracy. Save work to a folder or online account.	Use a search engine to search for information online. Use key phrases in search engines. Explain what autocomplete is and how	Search the web efficiently for information within a wide group of technologies (e.g. social media, image sites, video sites). Know how to analyse information and differentiate between	Save work to an online account or folder. Know how to analyse information online for beliefs, opinions and facts. Search for information safety on a wider group of technologies.	Understanding the importance of using an online community responsibly. Explaining what a search engine is,	Using search technologies effectively and safely. Explaining how search engines work and how results are selected and ranked. Knowing how to make references to and	Use search engines and technologies effectively and safely. Explain how search engines work to

		Clicking and dragging objects. Creating a piece of artwork which demonstrates clear control of the mouse. Using a computer to make a list. Save work on their account. Use simple keywords in search engines	back buttons; links, tabs and sections). Know what voice activated searching is and how it might be used (e.g. Alexa, Google Now, Siri). Explain how many devices in my home could be connected to the internet and can list some of those devices. Recognising different forms of technology beyond laptops and tablets. Recognising computers in the world around them and explaining the role of each computer.	Navigate a webpage correctly using various functions (e.g. home, forward, next page). Use simple keywords in search engines. Explain how we use voice activated searching in our lives. Recognising technology in the world and their role.	to choose the best suggestion. Explain the difference between a 'belief', an 'opinion' and a 'fact'.	'opinions', 'beliefs' and 'facts'.		Use key phrases in search engines. Explain the difference between a "belief", "opinion" and a "fact" online. Know ways of communicating online.	Suggesting several search engines to use. Understanding that anyone can create a website. Explaining why keywords are important and what the acronym TASK stands for. Explaining the role of web crawlers and recognising that results are rated to decide rank. Knowing how to search for information about an individual online.	acknowledge sources used from the internet	select and rank results. Explaining why keywords are important. Know how to search for specific information online. Identifying ways that information about people online can be used by others to make judgments about an individual. Knowing how to make references to and acknowledge sources used from the internet
Online Safety	When using the internet alongside an adult, or independently, learning what to do if they come across something that worries them or makes them feel uncomfortable. Begin learning some rules to follow to keep us safe online. Understand that some filters on tablets / internet are used to protect us	Explain the importance of a password. Know how to search and download images from the internet safely. Know that there are some people online who can make us feel sad or embarrassed. Know what to do if they come across something online that worries them or makes them feel uncomfortable. Explain why it is important to be considerate and kind to people online. Describe what information should not be put online without asking a trusted adult first. Describe how to behave online in ways that do not upset others	Identify ways of staying safe when talking to people online. Know not to share personal information online. Identify what they should so if they see or hear something online that makes them feel upset or uncomfortable. Explain how other people's identity online can be different to their identity in real life. Know examples of how we might use technology to communicate with others we don't know well (e.g. email) Explain how information put online can last for a long time.	Explain the rules we must follow to keep us safe online Know not to share personal information online. Know who our trusted adults are and why we might need to speak to them about online issues, Explain how identity online can be different to identity in real life. Explain why we use passwords for security. Identify that some information online may not be true. Identify how bullying online might look.	Explain what is meant by the term 'identity' and how we can represent ourselves in different ways online. Explain ways to change identity online and why it might be done (e.g. gaming, social media) Identify specific forms of communication using technology (e.g. emojis, text speak) Explain some risks of communicating online with people we don't know very well. Explain how people's feelings can be hurt by what is said or written online. Explain why we should be careful who we trust online and what information we can trust them with.	Explain how online identity can be different to the identity presented in 'real life'. Explain strategies for safe and fun experiences in a range of online social environments. Identify examples of how to be respectful to others online. Explain how others can find out information about me by looking online. Explain ways that some of the information about me online could have been created, copied or shared by others. Identify some online technologies where bullying might take place. Know ways people can be bullied through a range of	Identify how information about us can be stored online. Explain why identity may be changed online and how this can happen Explain various ways people can be bullied online. Identify some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups) Explain how to use other people's work respectfully. Identify times or situations when I might need to limit the amount of time I use technology. Use simple strategies for creating and keeping passwords private.	Explain how identity online can be copied, modified or altered. Explain that there are some people who we can communicate with online who may want to do harm. Know some positive contributions we can make to be part of online communities. Know some of the online communities we are part and describe how to collaborate with others positively. Know how to get help for someone that is being bullied online and assess when we need to do or say something or tell someone. Explain how to report online bullying and block people on the apps and platforms that we use.	Identify ways in which media can shape ideas about gender. Identify messages about gender roles and make judgements based on them. Explain and challenge why it is important to reject inappropriate messages about gender online. Explain issues online that might make me, or others feel sad, worried, uncomfortable, or frightened. Know examples of how we might get help, both on and offline and explain why we should keep asking for help until we get it. Know how to support others (including those who are having difficulties) online. Explain how impulsive and rash communications online may cause problems (e.g.	Identify ways in which media can shape ideas about gender. Challenge messages about gender roles and reject inappropriate stereotypes. Explain issues online that might make me, or others feel sad, worried, uncomfortable, or frightened. Know examples of how we might get help, both on and offline. Explain how to report online bullying and block people on the apps and platforms that we use.	

		Explain rules to keep us safe when we are using technology both in and beyond the home. Explain why work created using technology belongs to them (copyright/ownership).	Identify examples of bullying behaviour and how it could look online. Explain simple guidance for using technology in different environments and settings. Explain what passwords are and can use passwords for accounts and devices. Explain why some information found online may not be true. Know that content on the internet may belong to other people.	List some devices that are connected to the internet at home. Know that work online belongs to them and some content belongs to others.	Explain what is meant by 'trusting someone online' and why this is different from 'liking someone online'. Know who I should ask if I am not sure if I should put something online. Explain what bullying is and can describe how people may bully others. Explain why spending too much time using technology can sometimes have a negative impact on me. Know and give reasons why passwords are important. Know simple strategies for creating and keeping passwords private. Explain why copying someone else's work from the internet without permission can cause problems.	media (e.g. image, video, text, chat). Explain why I need to think carefully about how content I post might affect others, their feelings and how it may affect how others feel about them (their reputation). Know some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups) and can recognise some of these when they appear online. Explain that some people I 'meet online' (e.g. through social media) may be computer programmes pretending to be real people. Explain why lots of people sharing the same opinions or beliefs online does not make those opinions or beliefs true. Explain how using technology can distract me from other things I might do or should be doing. Identify times or situations when I might need to limit the amount of time I use technology. Explain what a strong password is. Know strategies for keeping my personal information private, depending on context. Explain that others online can pretend to be me or other people, including my friends and suggest why they might do this. Explain why, when searching on the internet for content to use, we		Know some helpline services who can support children (e.g. Childline). Explain and give examples of when and why it is important to be 'sceptical'. Explain why some information online may not be honest, accurate or legal. Explain why information that is on a large number of sites may still be inaccurate or untrue and how this may happen (e.g. sharing misinformation on purpose or by accident.) Know how to create and use strong and secure passwords. Explain how many free apps or services may read and share private information (e.g. friends, contacts, likes, images, videos, voice, messages, geolocation) with others. Explain how and why some apps may request or take payment for additional content (e.g. in-app purchases) and explain why we should seek permission from a trusted adult before purchasing. Explain, assess, and justify when it is acceptable to use the work of others. Explain ways technology can affect healthy sleep and can describe some of the issues.. Know some strategies, tips, or advice to promote healthy sleep with regards to technology.	flaming, content produced in live streaming). Know ways of reporting problems online for both myself and my friends. Explain how developing an online reputation will allow other people to form an opinion of me. Know some simple ways that help build a positive online reputation. Know how to capture bullying content as evidence (e.g screen-grab, URL, profile) to share with others who can help me. Identify a range of ways to report concerns both in school and at home about online bullying. Know the strategies we would apply to be discerning in evaluating digital content. Explain how and why some people may present 'opinions' as 'facts'. Know the terms 'influence', 'manipulation' and 'persuasion' and explain how I might encounter these online (e.g. advertising and 'ad targeting'). Know how to identify, flag and report inappropriate content. Know effective strategies for managing different passwords (e.g. password managers, acronyms, stories). Know what to do if passwords are lost or stolen. Explain what app permissions are and can give some examples from the technology or services.	Know the strategies we would apply to be discerning in evaluating digital content. Know effective strategies for managing different passwords (e.g. password managers, acronyms, stories). Know ways in which some online content targets people to gain money or information illegally and know strategies to help identify this content e.g. scams, phishing. Know common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose. Explain the importance of self regulating use of technology and demonstrate the strategies to do this (e.g. monitoring time online, avoiding accidents).

						need to consider who owns it and whether we have the right to reuse it.			Know simple ways to increase privacy on apps and services that provide privacy settings. Know ways in which some online content targets people to gain money or information illegally and know strategies to help identify this content e.g. scams, phishing. Know common systems that regulate age-related content (e.g. PEGI, BBFC, parental warnings) and describe their purpose. Know strategies to limit the impact of technology on my health (e.g. nightshift mode, regular breaks, correct posture, sleep, diet and exercise). Explain the importance of self regulating use of technology and demonstrate the strategies to do this (e.g. monitoring time online, avoiding accidents).	